

Docket No.0054.98

[0024] Figure 3 is a schematic drawing of a system of the invention which utilizes a settling unit between the nitrification bioreactor and the phosphorus separation reactor.

[0025] Figure 4 is a schematic drawing of a lagoonless system of the invention which includes a solid separation unit, an aeration unit, and a sedimentation unit prior to the nitrification bioreactor and phosphorus separation reactor unit.

[0026] Figure 5 is a schematic drawing of a lagoonless system of the invention which includes a solid separation unit and a denitrification/nitrification unit prior to the phosphorus separation reactor unit.

[0027] Figure <sup>6</sup> ~~5~~ is a graph showing the effect of alkali addition on pH of swine wastewater that received nitrification pretreatment versus control. <sup>7</sup>

[0028] Figure <sup>8</sup> ~~6~~ is a graph showing nitrogen losses in swine wastewater by ammonia volatilization.

[0029] Figure <sup>9</sup> ~~7~~ is a graph showing phosphorus removal from swine wastewater using calcium hydroxide.

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[0030] Figure <sup>9</sup> is a graph showing phosphorus removal from swine wastewater using calcium hydroxide and the effect on pH.

[0031] Figure <sup>10</sup> is a graph showing the use of calcium carbonate lime for the removal of phosphorus from swine wastewater.

[0032] Figure <sup>11</sup> is a graph showing application of carbonate lime to swine wastewater and its effects on pH and phosphorus removal.

#### DETAILED DESCRIPTION OF THE INVENTION

[0033] The present invention is a system for treating wastewater to at least reduce the amount of ammonia and phosphorus, as well as least reduce the presence of infectious microorganisms. For purposes of the present invention, infectious microorganisms include bacteria, viruses, algae, fungi, protozoa, etc. Soluble phosphorus in wastewater is precipitated and removed from wastewater in a form that can be transported and marketed as a fertilizer product. Furthermore, there is described a process for the removal of phosphorus from animal waste that requires minimum chemical addition and at least reduces problems of ammonia emissions and recovers phosphorus in a reusable form. The process